THE INVENTION CLAIMED IS:

1. A method of supplying substrates to a processing tool, comprising:

providing a plurality of load ports each having a mechanism adapted to open a substrate carrier;

providing a factory exchange location at which substrate carriers are exchanged with a substrate carrier transport device while the substrate carriers are in motion and being transported by the substrate carrier transport device;

providing a carrier handler having an end effector adapted to contact a substrate carrier, the carrier handler being adapted to transport substrate carriers between the factory exchange location and the plurality of load ports;

receiving a first plurality of substrate carriers at the factory exchange location from the substrate carrier transport device; and

for each of the first plurality of substrate carriers:

transporting the substrate carrier from the factory exchange location directly to a respective one of the plurality of load ports;

docking and opening the substrate carrier at the respective load port;

undocking and closing the substrate carrier at the respective load port;

transporting the substrate carrier from the respective load port directly to the factory exchange location; and

returning the substrate carrier to the substrate carrier transport device.

2. The method of claim 1, wherein the substrate carriers are single substrate carriers.

3. The method of claim 1, wherein the step of providing a plurality of load ports comprises providing two stacks of load ports.

4. The method of claim 3, wherein the carrier handler moves the substrate carriers only within an envelope defined by footprints of the two stacks of load ports.

5. The method of claim 1, wherein the docking of each substrate carrier occurs simultaneously with opening of the respective substrate carrier.

6. The method of claim 1, wherein the factory exchange location and the load ports have substantially the same footprint.

7. The method of claim 1, wherein the factory exchange location is at a height greater than respective heights of all of the load ports.

8. A substrate loading station for a processing tool, comprising:

a first plurality of load ports operatively coupled to the processing tool and each having a mechanism adapted to open a substrate carrier;

a factory exchange location at which substrate carriers are exchanged with a substrate carrier transport device while the substrate carriers are in motion and being transported by the substrate carrier transport device; and

a carrier handler having an end effector adapted to contact a substrate carrier, the carrier handler being adapted to transport substrate carriers between the factory exchange location and the first plurality of load ports;

wherein the carrier handler has a controller programmed to perform the steps of:

for each of the first plurality of substrate carriers:

transporting the substrate carrier from the factory exchange location directly to a respective one of the plurality of load ports;

docking and opening the substrate carrier at the respective load port;

undocking and closing the substrate carrier at the respective load port;

transporting the substrate carrier from the respective load port directly to the factory exchange location; and

returning the substrate carrier to the substrate carrier transport device.

9. The substrate loading station of claim 8, wherein the substrate carriers transported by the carrier handler are single substrate carriers.

10. The substrate loading station of claim 8, further comprising:

a second plurality of load ports, the second plurality of load ports being spaced apart from and to a side of the first plurality of load ports.

11. The substrate loading station of claim 10, wherein the carrier handler is adapted to move vertically in a space between the first and second pluralities of load ports.

12. The substrate loading station of claim 11, wherein the carrier handler is adapted to move the substrate carriers only within an envelope defined by footprints of the first and second pluralities of load ports.

13. The substrate loading station of claim 8, wherein each of the load ports is adapted to open a substrate carrier simultaneously with the substrate carrier docking with the load port.

14. The substrate loading station of claim 8, wherein the factory exchange location and the load ports have substantially the same footprint.

15. The substrate loading station of claim 8, wherein the substrate carrier transport device is a conveyor.

16. The substrate loading station of claim 8, wherein the factory exchange location is at a height greater than respective heights of all of the load ports.

17. An apparatus adapted to supply substrates to a processing tool, comprising:

a substrate carrier handler adapted to transport a substrate carrier to a first load port of the processing tool, the substrate carrier handler including an end effector adapted to support the substrate carrier; and

a controller coupled to the substrate carrier handler and operative to control the substrate carrier handler such that the end effector of the substrate carrier handler disengages the substrate carrier from a substrate carrier conveyor while the substrate carrier is in motion and being transported by the substrate carrier conveyor, the controller further operative to perform the steps of:

transporting the substrate carrier from the substrate carrier conveyor directly to the first load port;

docking and opening the substrate carrier at the first load port;

undocking and closing the substrate carrier at the first load port; and

returning the substrate carrier directly to the substrate carrier conveyor.

18. An apparatus adapted to supply substrates to a processing tool, comprising:

a substrate carrier handler adapted to transport a substrate carrier to a first load port of the processing tool, the substrate carrier handler including:

a vertical guide;

a horizontal guide coupled to the vertical guide; and

an end effector adapted to support the substrate carrier and to move vertically relative to the vertical guide and horizontally relative to the horizontal guide; and

a controller coupled to the substrate carrier handler and operative to control the substrate carrier handler such that the end effector of the substrate carrier handler disengages the substrate carrier from a substrate carrier conveyor positioned adjacent the substrate carrier handler, the controller further operative to perform the steps of:

transporting the substrate carrier from the substrate carrier conveyor directly to the first load port;

docking and opening the substrate carrier at the first load port;

undocking and closing the substrate carrier at the first load port; and

returning the substrate carrier directly to the substrate carrier conveyor.

19. A method of transferring a substrate carrier, comprising:

conveying the substrate carrier on a substrate carrier conveyor positioned adjacent a substrate loading station that includes a substrate carrier handler adapted to transport the substrate carrier to a load port of a processing tool;

employing an end effector of the substrate carrier handler of the substrate loading station to disengage the substrate carrier from the substrate carrier conveyor while the substrate carrier is in motion and being transported by the substrate carrier conveyor;

transporting the substrate carrier from the substrate carrier conveyor directly to the load port;

docking and opening the substrate carrier at the load port;

undocking and closing the substrate carrier at the load port; and

returning the substrate carrier directly to the substrate carrier conveyor.

20. A method of transferring a substrate carrier to a substrate loading station, comprising:

conveying the substrate carrier on a substrate carrier conveyor positioned adjacent the substrate loading station, the substrate loading station having:

a substrate carrier handler adapted to transport the substrate carrier to a first load port of a processing tool, the substrate carrier handler including:

a vertical guide;

a horizontal guide coupled to the vertical guide; and

an end effector adapted to support the substrate carrier and to move vertically relative to the vertical guide and horizontally relative to the horizontal guide;

employing the end effector of the substrate carrier handler of the substrate loading station to disengage the substrate carrier from the substrate carrier conveyor;

transporting the substrate carrier from the substrate carrier conveyor directly to the first load port;

docking and opening the substrate carrier at the first load port;

undocking and closing the substrate carrier at the first load port; and

returning the substrate carrier directly to the substrate carrier conveyor.